KPDES FORM SDAA

Kentucky Pollutant Discharge Elimination System (KPDES)

Socioeconomic Demonstration and Alternatives Analysis

The Antidegradation Implementation Procedure found in 401 KAR 10:030, Section 1(3)(b)3 requires KPDES permit applications for new or expanded discharges to waters categorized as "Exceptional or High Quality Waters" to conduct a socioeconomic demonstration and alternatives analysis to justify the necessity of lowering local water quality to accommodate important economic or social development in the area in which the water is located. This demonstration shall include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Project Information

Facility Name: Cambrian Coal Corporation (DNR #: 898-0807 Am. 1)

Location: Millard	**County: Pike**

Receiving Waters: Pompey Branch, Wolfpen Fork & Right Fork of Red Creek

II. Socioeconomic Demonstration

1. Define the boundaries of the affected community:
(Specify the geographic region the proposed project is expected to affect. Include name all cities, towns, and counties. This geographic region must include the proposed receiving water.)

The project is located near the community of Millard in Pike County. Pike county is located in the Eastern Coal Field region of the state. It is bordered by the Kentucky counties of Martin, Floyd, Knott and Letcher. On the east, it is bordered by the West Virginia counties of Mingo, Wayne and McDowell. The HUC 8 receiving watershed is the Upper Levis Fork (HUC 05070202).

This amendment proposes additional surface disturbance of 271.5 acres with 184 auger acres underlying the surface acres. This project proposes one additional permanent hollowfill (HF#2), one embankment sediment control structure SS-005) and eight bench sediment control structures (SS-002,003,004,008,009,010,011,012). Sediment control structure 002 will not discharge but rather flow into existing structure 001.

This project proposes discharge into the Right Fork of Red Creek, Pompey Branch and Wolfpen Fork which discharges into the Levisa Fork of the Big Sandy River Basin.

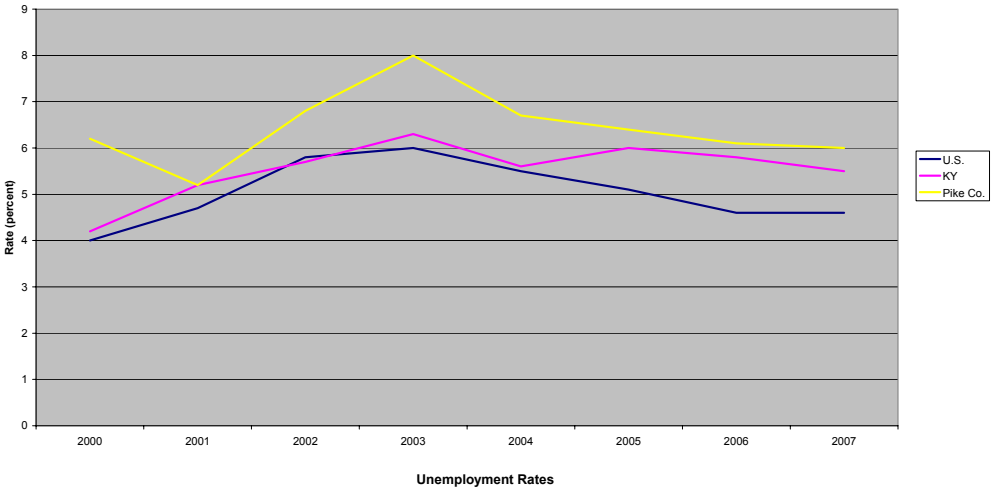
2. The effect on employment in the affected community:
(Compare current unemployment rates in the affected community to current state and national unemployment rates. Discuss how the proposed project will positively or negatively impact those rates, including quantifying the number of jobs created and/or continued and the quality of those jobs.)

The small community of Millard in Pike County historically has an unemployment rate significantly higher than the state and national averages. This project will continue the employment of 80 people of which 95% are local residents. In September 2009, the unemployment rate for Pike County was 10.7% and there were 2,801 residents unemployed and seeking employment.

The average mining wage for Pike County miners in 2008 was $1,194.59 (*Source: Kentucky Education Cabinet, Dept. for Workforce Investment, Average Weekly Wages of Workers Covered by Kentucky Unemployment Insurance Law, 2008 Calendar year.)*

Studies indicate that the mining industry creates 3 indirect related jobs for each actual direct mining position.* Based on these indicators, over 320 jobs will be supported by this project. In 2007, 20.8%** of Pike county's residents were living below the poverty level. .

**Source: University of Kentucky Center for Business and Economic Research: Economic Impact Analysis of Coal in Kentucky, (1995-2004) by Haywood and Baldwin*
***Source: U.S. Census Bureau, Small Area Estimate Branch*



In addition to the direct jobs provided by this project, it will also provide for more employment indirectly in mining service jobs. These jobs include equipment sales, mining engineering consultants, food service, fuel sales, transportation, coal washing and blending. The mining industry directly contributes to Pike County's economy through real taxes, personal property taxes and the state severance tax. The severance tax rate for coal is 4.5% of which 50% is slated to be returned to the county of origin. Severance tax dollars are used for such things as infrastructure, education, development and recreation. This project will contribute to this tax base and help provide funding for county improvements.

II. Socioeconomic Demonstration- continued

3. The effect on median household income levels in the affected community:
(Compare current median household income levels with projected median household income levels. Discuss how proposed project will positively or negatively impact the median household income in the affected community including the number of households expected to be impacted within the affected community.)

The median household income in Pike County in 2008 was $32,033 which is significantly lower than state and national statistics.

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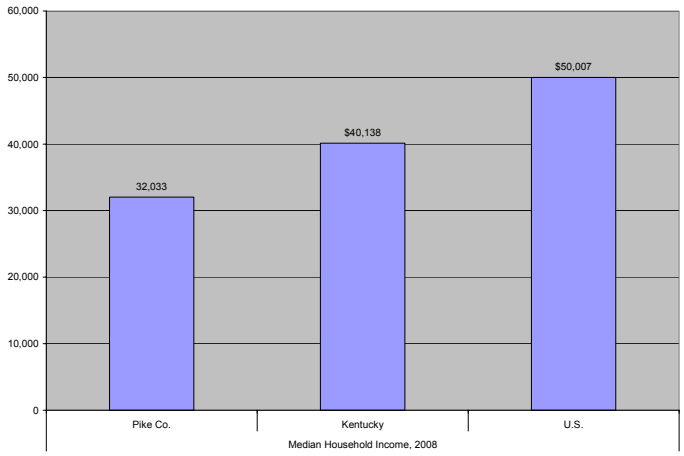
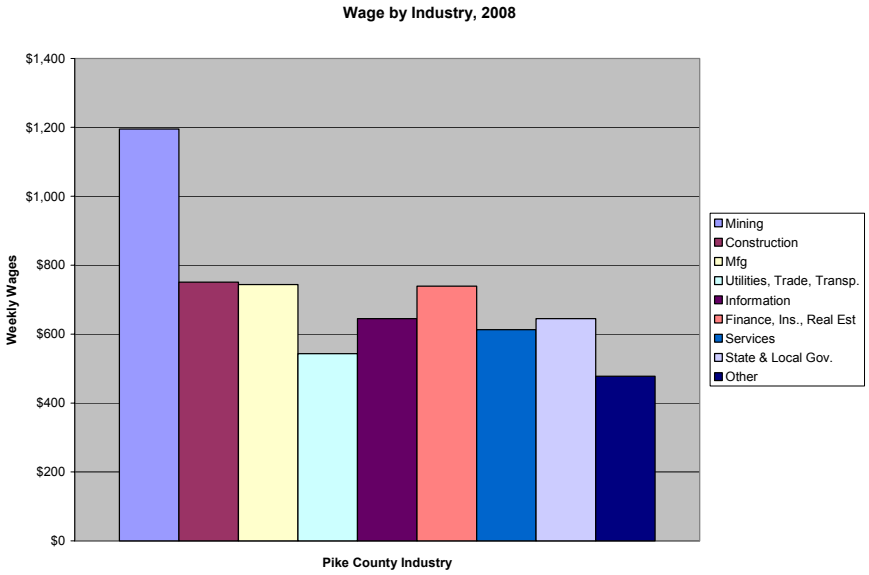


The estimated annual income of the direct jobs provided by this project is $62,000/year. This is appreciably greater than income generated from all other occupations in Pike county.



*Average Weekly Wages by Industry Division Covered by Unemployment Insurance:2007, www.bls.gov

4. The effect on tax revenues of the affected community:

(Compare current tax revenues of the affected community with the projected increase in tax revenues generated by the proposed project. Discuss the positive and negative social and economic impacts on the affected community by the projected increase.)

This project is expected to increase local, state and federal revenues from the extraction, processing, and sales of the recovered resource.

Production from this area is estimated at 153,000 tons. Estimates for a fraction of the tax revenue based on $58/ton* selling price include:

Federal excise tax	$1.10/ton	$168,300
Reclamation Tax	$0.35/ton	$53,500
Ky Severance Tax	4.5% of sales price	$399,330

Recovered reserves as well as reserves in situ are subject to taxation. Monies paid to employees are subject to state, federal and local taxes. Tangible equipment and properties are also taxed. Providing 80 direct jobs and an additional 240 support jobs, monies received in salaries will also support the local economy by boosting sales in the area.

During the operation, such things as dust, noise and increased traffic have the potential to temporarily decrease the value of a surrounding property. However, the decreased values should be minimal and limited to the life of the permit. The overall value of the mining property will decrease after all of the coal has been removed however there should be no decrease in the value of the surface land within the bonded mine site.

**EIA, Nov.09, 2009 Sport Market Prices*

II. Socioeconomic Demonstration- continued

5. The effect on an existing environmental or public health in affected community:
(Discuss how the proposed project will have a positive or negative impact on an existing environmental or public health.)

Previous pre law mining has impacted approximately 72.4 acres within this amended area leaving areas with poor drainage and sediment control. Once mitigation begins, the stream banks will be stabilized to prevent erosion, species indigenous to the area will be planted to establish an adequate riparian zone and stream channels will be rehabilitated to curb sedimentation. This will lead to a healthier habitat for aquatic species as well as other wildlife. Reclamation plans call for development of a wildlife and fish habitat. This will provide an area that is ecologically functional was well as aesthetically pleasing

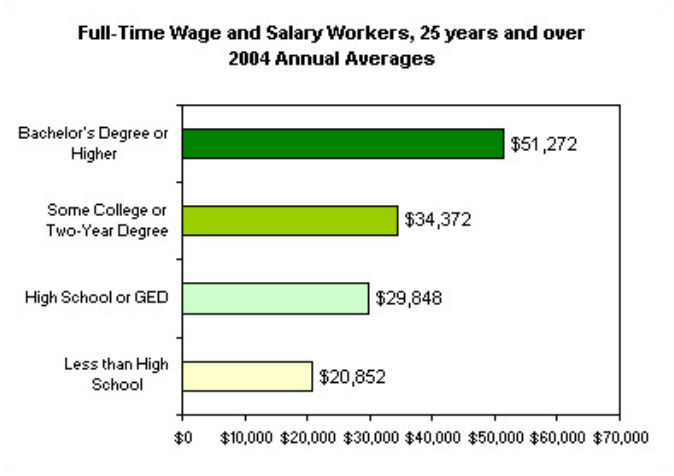
6. Discuss any other economic or social benefit to the affected community:
(Discuss any positive or negative impact on the economy of the affected community including direct and or indirect benefits that could occur as a result of the project. Discuss any positive or negative impact on the social benefits to the community including direct and indirect benefits that could occur as a result of the project.)

Economically this project will benefit retailers, service industry personnel, food establishments and entertainment industries in the community. Severance tax dollars fund basic needs such as water and sewer projects but also fund recreational, social and cultural developments as well.

The average weekly earnings for a mining employee in Pike County in 2008 were $1194.59 while the county average for all industries was $726.01.* Mining employees wages averaged more than all other Pike County workers. The income realized from the direct jobs provided by this project will be approximately $62,000 year/employee or near $5 million/year collectively. Currently Kentucky ranks 44th nationally in per capita income.

Numerous studies indicate that a person's earning potential can be directly linked to his or her level of education.

In 2008, only 11.2% of Pike County residents held bachelors or higher degrees greatly limiting their earning potential. It is estimated that a persons with only a high school education will earn approximately half of what a person with a college degree with similar experience would earn. A person lacking a high school education will earn a third of the income of a college graduate:



Source: U.S. Bureau of Labor Statistics

These earnings will help these households to maintain or improve their current economic status and provide opportunities for gains in social welfare only realized from enhanced income. Higher earnings have been linked to lower crime rates, reduced welfare and healthier lifestyles.

This amended area will remove approximately 153,000 tons of coal that would not have been recovered or made available to the market otherwise. This will result in employment for approximately 320 people, aid in development and maintenance of indirect jobs and will increase the amount of money the area receives in personal and severance taxes. Pike County should see the return of near $200,000 in severance tax dollars from this project alone.

III. Alternative Analysis

1. Pollution prevention measures:

(Discuss the pollution prevention measures evaluated including the feasibility of those measures and the cost. Measures to be addressed include but are not limited to changes in processes, source reductions or substitution with less toxic substances. Indicate which measures are to be implemented.)

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminants, not particulate matter, in storm run-off in smaller, urban drainage areas. The high solids involved in a storm event could possibly clog the filtration unit rendering it ineffective. Sand filters do not control storm water run off and do not prevent downstream bank and channel erosions as proposed sediment structures are design to do. Also, the operational effectiveness of these units in colder climates and freezing conditions are not yet know. Studies indicate a treatment cost of $12 per cubic foot for this type of treatment.

Constructing an on-site storm water treatment facility was considered. The volume of discharge and the lift required make this an unfeasible option. Consultation with Beckman Environmental in Cincinnati, Ohio, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, Ohio involving a lift of 30 feet, a peak discharge of 3800 gpm, a grit removal station, and influent and effluent lines at $2.5 million dollars. Using this scenario, treatment would exceed $650/gallon volume.

Accepting the more stringent discharge limitations was considered but because this would require more aggressive chemical treatment, the real potential for an environmental or personnel accident exist. Based on information from OSMRE, the cost for chemical treatment of a mildly acidic mine drainage with an average flow of 100 gpm using caustic soda was $94,784. With a possible flow of over 472,000 g.p.m. during a rainfall event, the cost of this option would make the cost prohibitive.

Alternate mining locations and mining methodologies are not applicable to this project.

Choosing not to mine this area as an alternate to lowering water quality was evaluated but the loss of the 80 direct jobs resulting in nearly $3 million dollars lost in approximate collective annual salaries and the loss of as many as 240 indirect jobs as well as revenues including severance tax estimated at $400,000 dollars, would have negative economic consequences.

This operation will use surface and auger techniques to recover coal reserves. Existing roads and infrastructure will be used reducing impacts from additional construction. Flow from this project area is required to pass through sediment structure which is engineered to meet SMCRA guidelines and KPDES discharge limitations.

2. The use of best management practices to minimize impacts:
(Discuss the consideration and use of best management practices that will assist in minimizing impacts to water quality from the proposed permitted activity.)

Prudent care will be exercised to minimize impacts to water quality within the permit area.

Construction and in-stream work will be scheduled during low flow or no flow conditions as feasible.

Silt control will be established before this area is disturbed.

Existing vegetation will be preserved as possible and vegetative cover will be reestablished as soon as possible.

All water leaving the permit area will pass through a sediment control structure before exiting the permit area. These structures are engineered to be the most efficient and least invasive and are designed to prevent sediment from entering the stream in significant quantities by allowing ample time for solids to settle to the bottom of the pond.

Point source discharge will be specifically identified as to source and location. Surface and ground water monitoring plans have been designed, and will be used to identify any alteration in water quality or quantity.

Compliance with the limits established for the outlets in the KPDES permit are designed to prevent adverse impacts to the receiving channels.

Temporary sediment control devices, including silt fences, hay bales, ditches and berms will be used to direct flow to the sediment structures.

Stockpiles and/or overburden storage sites will be placed out of drainage patterns.

Upon completion of mining, all exposed coal seams and any toxic, combustible or other waste materials will be covered with a minimum of four feet of non-toxic and non-combustible material. This material may be blended or treated to neutralize toxicity in order to prevent pollution, sustain combustion, and/or minimize any adverse affects.

An emergency spill response and clean up plan will be maintained to prevent potential release into the waterway.

3. Recycle or reuse of wastewater, waste by-products, or production materials and fluids:
(Discuss the potential recycle or reuse opportunities evaluated including the feasibility of implementation and the costs. Indicate which of, of these opportunities are to be implemented)

Limited potential for recycle or reuse of water exists within the project area.

Water from sediment control structures can be used for on site dust suppression, hydroseeding and when applicable deep mine and preparation plant operation.

Dust suppression typically involves using large water trucks to spray haul roads, material stockpiles, and other non-vegetated areas being worked by equipment.

The volume of these tankers vary but an industry average is about 4,000 -5,000 gallons. Depending on the size of the operation and weather conditions, an operation could use up to 30,000 gallons of water per day for dust suppression during dry conditions. Estimating that suppression would be needed 100 work days in a calendar year, the annual usage would be 3 million gallons.

During reclamation, hydroseeding is used to evenly distribute seed, fertilizer and mulch without encroaching on minimally compacted areas. Hydroseeding is the process where seed, fertilizer, mulch, and water are mixed together to form a slurry mixture that is sprayed, under pressure for seeding. The ratio of seed mixture to water varies but an approximate ratio is 1:3. In order to use hydroseeding as an application process, access to a water source has to be within close proximity of the project.

Industry reclamation personnel estimate the usage of water resources for hydroseeing application at 3500 gallons per acre. Water application to hydro seed this permit area would be approximately 945,000 gallons; however, this represents a one-time application of which the majority would occur after resource recovery is completed.

Preparation plants are normally fixed structures whose location may be central to several operations and rail loading facilities. Preparation plants routinely withdraw water for the operation of these facilities however; there is no preparation plant at this site.

This project proposes to use surface and auger techniques to recover these coal reserves. Underground mining use is not applicable to this project.

III. Alternative Analysis - continued

4. Application of water conservation methods:
(Discuss the potential water conservation opportunities evaluated including the feasibility of implementation and the costs. Indicate which of, of these opportunities are to be implemented)

Available and practical water conservation methodology will be employed by Cambrian Coal Corporation during the life of this project.

The drainage area for this area is 305 acres. The possible peak discharge during a 25 year/24 hour required storm event could exceed 472,000 gallons per minute or 680 million gallons per day.

Water from sediment control structures can be used for on site dust suppression, hydro seeding and when applicable preparation plant operation.

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Preparation plants are normally fixed structures whose location may be central to several operations and rail loading facilities. Preparation plants routinely withdraw water for the operation of these facilities. There is no preparation plant at this site.

Using water already impounded in the sediment control structures for these purposes conserves water and confines withdrawal to the project location. However, not all the water resulting from this site can be used for these purposes and discharge is still necessary to the mining process and to maintain the stream function.

5 Alternative or enhanced treatment technology:

(Compare feasibility and costs of proposed treatment with the feasibility and costs of alternative or enhanced treatment technologies that may result in more complete pollutant removal. Describe each candidate technology including the efficiency and reliability in pollutant removal and the capital and operational costs to implement those candidate technologies. Justify the selection of the proposed treatment technology.)

Sand filtration is used primarily as a pre-treatment to remove microbial contaminates, not particulate matter, in storm run-off in smaller, urban drainage areas. As an alternative treatment option, sand filtration was evaluated but deemed not applicable. The high solids involved in a storm event could possibly clog the filtration unit rendering it ineffective. Sand filters do not control storm water flow and do not prevent downstream bank and channel erosions as proposed sediment structures are designed to do. Also, the operational effectiveness of these units in colder climates and freezing conditions are not yet know. Studies indicate a treatment cost of $**12 per cubic foot volume*** for this type of treatment.

The volume of discharge and the lift required make construction of an on-site water treatment facility unfeasible. Consultation with Beckman Environmental in Cincinnati, Ohio, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, Ohio involving a lift of 30 feet, a peak discharge of 3800 gpm, a grit removal station, and influent and effluent lines at $2.5 million dollars. Using this scenario, treatment would exceed **$650/gallon volume**.

Accepting the more stringent discharge limitations was considered but because this would require more aggressive chemical treatment, the real potential for an environmental or personnel accident exist. The costs are extreme and it was dismissed. Based on information from OSMRE, the cost for chemical treatment of a mildly acidic mine drainage with an average flow of **100 gpm** using caustic soda was **$94,784**. With a possible flow of 163,000 gpm during a10yr/24hr rainfall event, the cost of this option would make the cost of this option prohibitive.

Comparatively, an industry estimate for construction of a medium capacity embankment pond is approximately **$40,000** while construction of a dug out bench pond is estimated at roughly **$7,500**. These structures are designed to comply with KPDES permit limitations preventing degradation of stream quality

III. Alternative Analysis - continued

6. Improved operation and maintenance of existing treatment systems:

(Discuss improvements in the operation and maintenance of any available existing treatment system that could accept the wastewater. Compare the feasibility and costs of improving an existing system with the feasibility and cost of the proposed treatment system.)

Sediment structures are designed to accommodate a 25 year 24 hour storm event while allowing time for settling of sediment prior to discharge into the receiving stream to meet effluent discharge limitations. Discharge from these structures is precipitation dependent and these structures are designed to safely impound and discharge the runoff from the project area while limiting the impact to what is required based on industry standards.

Treatment, including the use of flocculants, prior to entry into the sediment control structures was examined. Although sometimes effective treating concentrations of high solids, the use of flocculants would require additional equipment, construction and cost. The flocculent has to be dispersed into the stream, a "mixing" area has to be constructed and a primary "pond" is often recommended for the initial settling of large solid particles. Since the sediment control structure should, under normal conditions, effectively treat the solids from this project, this option creates additional impact, additional cost and additional hazards and is not necessary.

7. Seasonal or controlled discharge options:

(Discuss the potential of retaining generated wastewaters for controlled releases under optimal conditions, i.e. during periods when the receiving water has greater assimilative capacity. Compare the feasibility and cost of such a management technique with the feasibility and cost of the proposed treatment system.)

Flow from the area will be controlled with the use of the sediment structure, diversion ditches, and temporary sediment control devices so as not to create a plume, standing waters or fluctuations in normal water levels.

Sediment structures are designed to accommodate a 25 year 24 hour storm event while allowing time for settling of sediment prior to discharge into the receiving stream to meet effluent discharge limitations. Discharge from these structures is precipitation dependent and the design of the structures and the spillways does not facilitate the impounding water for a controlled hydrological release.

Pumping of the pond is not anticipated except for removal during final bond release or during an unanticipated emergency event. If a situation requires pumping, then monitoring stations above and below the pumped inflow area will be established. The monitoring stations will measure flow and pH for significant increases. Pumping will not occur when flow is below the critical stream velocity of 1 c.f.s.

III. Alternative Analysis - continued

8 Land application or infiltration or disposal via an Underground Injection Control Well

(Discuss the potential of utilizing a spray field or an Underground Injection Control Well for shallow or deep well disposal. Compare the feasibility and costs of such treatment techniques with the feasibility and costs of .proposed treatment system.)

A minimal amount of water may be withdrawn from sediment structures for hydroseeding and dust control but broader land application is not applicable. Usage for hydroseeding and dust suppression is site specific but a median estimate for hydroseeding usage is 3500 gallon/acre and for dust suppression 30,000/day for 100 days/year.

All the water resulting from this site cannot be used for these purposes and discharge is still necessary to the mining process and to maintain the stream function.

There are no known underground works in the area that could be considered as a subsurface disposal option. Such works are considered as potentially dangerous due to the uncertainty of the condition of the remaining structures. The possibility exists that pumping water into these works could cause a “blow-out” or leakage leading to both a public safety and environmental threat.

9 Discharge to other treatment systems

(Discuss the availability of either public or private treatments systems with sufficient hydrologic capacity and sophistication to treat the wastewaters generated by this project. Compare the feasibility and costs of such options with the feasibility and costs of the proposed treatment system.)

The nearest sewage treatment plant is approximately 6.5 miles away at Pikeville, Kentucky. The plant was not designed for, or capable of, effectively treating either the type or volume of water possible with this project. Influx of water from this facility would overload this facility leading to a bypass which would result in the discharge of untreated municipal wastes creating a potentially serious public health risk

Because of the topography, routing water to this plant would require conservatively 35,000 ft of carrier line, an extensive network of pump and lift stations and obtaining numerous easements and right-of-ways. Conservatively estimating line at $50/foot, a minimum of 2 lift stations costing $75,000 each per mile, a central collection system, ignoring other requirements, the minimum cost of this option would exceed $3 million dollars.

***Table 1**
Pressure (LPS)

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	0	0	2
100 gpm P.S. $43,200	0	1	2
Composite Cost	$0	$43,200	$194,400

Gravity

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	1	0	2
100 gpm P.S. $43,200	2	1	2
Composite Cost	$140,400	$43,200	$194,400

A Mathematical Model For Estimating Sewer Costs"
by George A. Earle, III, P.E. and R. Paul Farrell Jr., P.E., Environment One Corporation

**Lift stations are site specific and vary greatly but are specific to topography and substrate composition:*

Transporting this volume of water by self-contained disposal trucks to a disposal site would be excessively expensive. Based on a 25 year, 24 hour storm event calculation, the possible peak discharge from this project could exceed 470,000 g.p.m. Rates quoted from Somerset Environmental in Somerset, Kentucky indicated charges of $65/hour (gate to gate)/3,000 gallon pick-up of non-hazardous wastewater and a $0.49/gallon disposal fee.

The excavation, grading and installation of lines and required lift stations would create detrimental environmental effects.